

We claim:

1. A method of making an electrode coil for a high intensity discharge (HID) lamp comprising the steps of:  
  
closely wrapping a first wire around a mandrel in a first direction to form a first coil with a helical groove on an exterior surface;  
  
closely wrapping a second wire in the first direction in the helical groove to form a second coil, where a first turn of the second wire touches a first turn of the first wire and a last turn of the second wire touches a last turn of the first wire; and  
  
replacing the mandrel with a tungsten core so that a free end of the tungsten core is adjacent to but spaced from a corresponding end of the first coil, the tungsten core and the first and second coils being an electrode coil for a HID lamp.
2. The method of claim 1, wherein the second wire is the same length as the helical groove and entirely within the helical groove.
3. The method of claim 1, after wrapping the second wire and before replacing the mandrel, further comprising the steps of heat-treating the first and second coils, cutting the first and second coils to a desired length, and heat-treating the cut coils.
4. The method of claim 1, wherein the first and second wires are tungsten wires with the same diameter.
5. A method of making an electrode coil for a HID lamp, comprising the steps of:  
  
wrapping a first wire around a mandrel with each turn of the first wire after a first turn touching a previously lain turn of the first wire, the first wire being wrapped in a first direction to form a first coil with a helical groove on an exterior surface;

wrapping a second wire in the first direction directly on the first wire in the helical groove to form a second coil, a first turn of the second wire touching the first turn of the first wire and a last turn of the second wire touching a last turn of the first wire;

dissolving the mandrel; and

inserting a tungsten core into the first coil so that a free end of the tungsten core is adjacent to but spaced from a corresponding end of the first coil, an exterior of the core touching an interior of the first coil, the tungsten core and the first and second coils being an electrode coil for a HID lamp.

6. The method of claim 5, wherein the second wire is the same length as the helical groove and entirely within the helical groove.

7. The method of claim 5, after wrapping the second wire and before dissolving the mandrel, further comprising the steps of heat-treating the first and second coils, cutting the first and second coils to a desired length, and heat-treating the cut coils.

8. The method of claim 5, further comprising the steps of affixing the first wire to the tungsten core and affixing the second wire to the first wire.

9. The method of claim 5, wherein each turn of the second wire after the first turn touches a previously lain turn of the second wire.

10. The method of claim 5, wherein the first and second wires are tungsten wires with the same diameter.

11. An electrode coil for a HID lamp, comprising:  
a tungsten core with a free end adapted to be placed in a HID tube;  
a first coil on said tungsten core, said first coil comprising a first wire wrapped in a first direction with each turn of said first wire touching another turn of said first

wire, said first coil having an exterior surface with a helical groove therein, said free end of said tungsten core being adjacent to but spaced from a corresponding end of said first coil, an exterior of said tungsten core touching an interior of said first coil; and

a second coil on said first coil, said second coil comprising a second wire wrapped in the first direction directly on said first wire in said helical groove, a first turn of said second wire touching a first turn of said first wire and a last turn of said second wire touching a last turn of said first wire.

12. The electrode of claim 11, wherein said second wire is the same length as said helical groove and entirely within said helical groove.

13. The electrode of claim 11, wherein said first wire is affixed to said tungsten core and said second wire is affixed to said first wire.

14. The electrode of claim 11, wherein each turn of said second wire touches another turn of said second wire.

15. The electrode of claim 11, wherein said first and second wires comprise tungsten wires with the same diameter.